JAPAN

EDICT OF GOVERNMENT

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JIS B 6602 (1983) (English): Safety standards for construction of spindle shapers

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The citizens of a nation must honor the laws of the land.

Fukuzawa Yukichi

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JIS

JAPANESE INDUSTRIAL STANDARD

Safety Standards for Construction of Spindle Shapers

JIS B 6602—1983

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JAPANESE INDUSTRIAL STANDARD J I S

Safety Standards for Construction of Spindle Shapers

B 6602-1983

1. Scope

This Japanese Industrial Standard specifies the safety structures, safety devices, handling instructions, inspection sheets and markings for the spindle shaper molders and double spindle shapers, hereinafter referred to as the "spindle shapers" ([1]).

Note ([1]) Refer to JIS B 0114.

2. Safety Structures

2.1 Frame and Bed The frame and bed shall be in accordance with the following:

(1) These shall be so constructed as to be capable of installing securely and easily.

(2) It shall not cause excessive vibrations and noises when rotated at the maximum speed under no load with the largest cutting tool attachable (cutting tool of permissible height in the maximum diameter and of permissible diameter in the maximum height) attached.

2.2 Covers Such places which are liable to cause hazard due to contact during rotation as rotating parts of the cutter block (except the part which is necessary for cutting), gears, pulleys, belts, etc. shall be provided with covers.

Applicable Standards:

JIS B 0114-Glossary of Terms for Wood Working Machinery

JIS G 4051-Carbon Steels for Machine Structural Use

JIS G 5501-Grey Iron Castings

Reference Standard:

JIS B 6507-General Code of Safety for Woodworking Machinery

2.3 Main Spindle The main spindle shall be in accordance with the following:

(1) The material shall be S 45 C of JIS G 4051 or that having mechanical properties equal or superior thereto.

(2) The clamping screw to be equipped with the main spindle shall be self-fastening.

(3) The bolts, nuts, etc. which are to be used for fastening of the flange shall be processed with locking which is capable of preventing loosening at the time of braking.

(4) The upper end of the main spindle shall either be so shaped as not liable to entangling clothings and others during rotation, or be processed with preventing measures thereof.

2.4 Flanges The flanges shall be in accordance with the following:

(1) The material shall be FC 20 of JIS G 5501 or that having mechanical properties equal or superior thereto.

(2) The shape of flanges shall be hard to deform due to fastening.

(3) The fixed side flange shall either be constructed as one block with the main spindle, or be that fixed to the main spindle by means of key or screw, shrinkage fit, force fit, etc.

(4) Diameter of the fixed side flange shall be the value 1.7 times or over the main spindle diameter.

2.5 Collars The collars shall be in accordance with the following:

(1) The material shall be FC 20 of JIS G 5501 or that having mechanical properties equal or superior thereto.

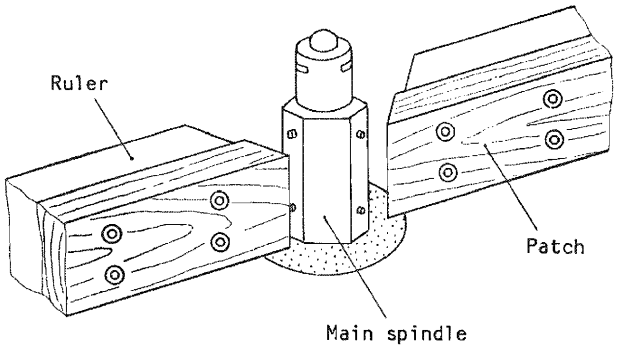
(2) The diameter shall be equal to or over outside diameter of the fastening nut.

2.6 Rulers The rulers shall be in accordance with the following:

(1) These shall be so constructed as to be fixed securely to the table, body, etc.

(2) These shall be so constructed as to be capable of attaching patches (see Fig. 1) which have been made of material not injurious to the cutting tools.

Fig. 1. Patch



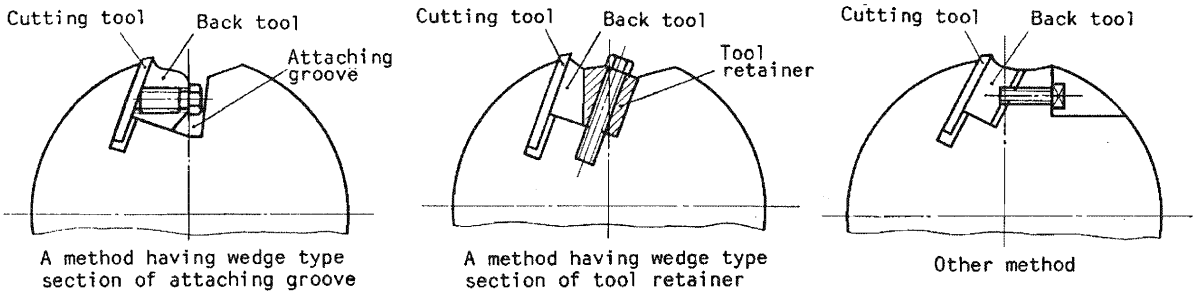
Remark: The figure gives an example, but it does not specify the construction.

(3) The height shall be the maximum height or over of the cutting tool which is capable of being attached.

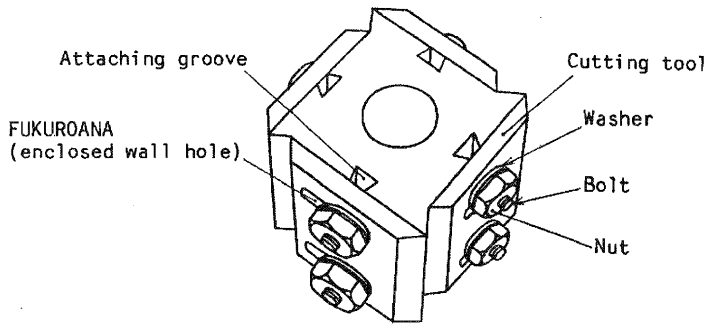
2.7 Cutter Block The cutter block shall be so constructed that the cutting tool, back tool, etc. are not liable to fly out due to centrifugal force (see Fig. 2).

Fig. 2. Cutter Block

(a) Round Trunk Type



(b) Cubic Trunk Type



Remark: The figure indicates an example, and it does not specifies the construction.

2.8 Cutting Chips Discharging Mechanism The spindle shaper should preferably be equipped with the construction or device which is capable of discharging cutting chips without interference.

2.9 Speed Change Gear of Main Spindle The spindle shaper which is capable of changing speed of the main spindle shall be so constructed as not to cause loosening of the cutter, for example, by passing through a neutral position in the case of converting the high speed rotation to the low speed rotation.

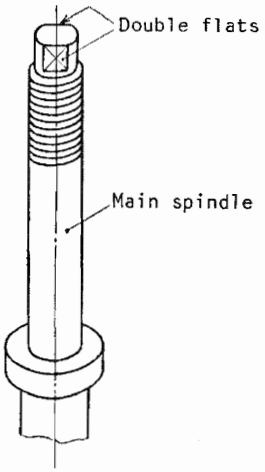
2.10 Braking Device of Main Spindle The spindle shaper shall be provided with the braking device for stopping rotation of the main spindle after the power has been shut off.

Furthermore, the braking time should preferably be within 10 sec.

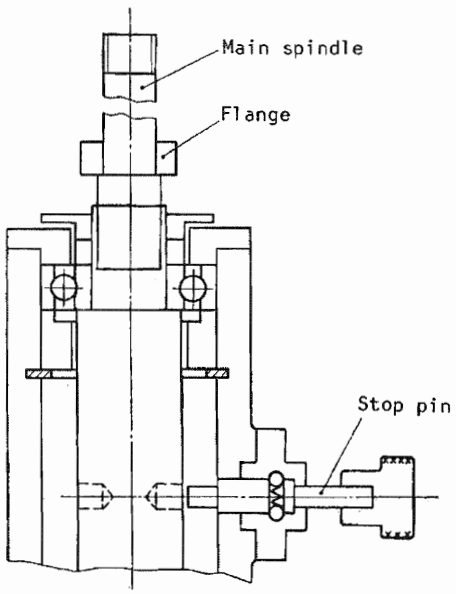
2.11 Fixing Device of Main Spindle The spindle shaper shall be provided with the device which is capable of fixing the main spindle in replacing the cutting tool (see Fig. 3).

Fig. 3. Fixing Device of Main Spindle

(a) Where a Width Across Flat Is Used



(b) Where a Stop Pin Is Used



Remark: The figure gives an example, but it does not specify the construction.

2.12 Inclining Device of Main Spindle and Lifting and Descending Device of Main Spindle The inclining device of main spindle and lifting and descending device of main spindle shall be so constructed as to be capable of fixing securely the main spindle at an arbitrary position.

2.13 Steady Rest Device The steady rest device shall be in accordance with the following:

(1) It shall be so constructed that the centre line of the main spindle and the centre line of the steady rest device are mounted in alignment with each other.

(2) It shall have sufficient strength capable of preventing deflection of the main spindle.

2.14 Guide Ring The guide ring shall be in accordance with the following:

(1) The guide ring shall be such that can be mounted securely to the main spindle or table.

(2) The peripheral surface shall be small in frictional resistance due to contact.

2.15 Operating Device The operating device shall be in accordance with the following:

(1) A power breaking device shall be provided at a position where the operator is able to operate without leaving his working position.

(2) The starting switch shall be such that it is not liable to be activated unexpectedly by contact, vibration, etc.

(3) For that with plural main spindles, it shall be such that the start and stop are made on respective main spindles.

2.16 Restart Preventing Device The spindle shaper should preferably be provided with a device for preventing automatic starting due to restoration of source, after the source has been broken by service interruption or switching-off of the main switch.

3. Safety Devices

The spindle shaper shall be provided with a preventing device from contact with cutting edge as the safety device. The construction shall be in accordance with the following:

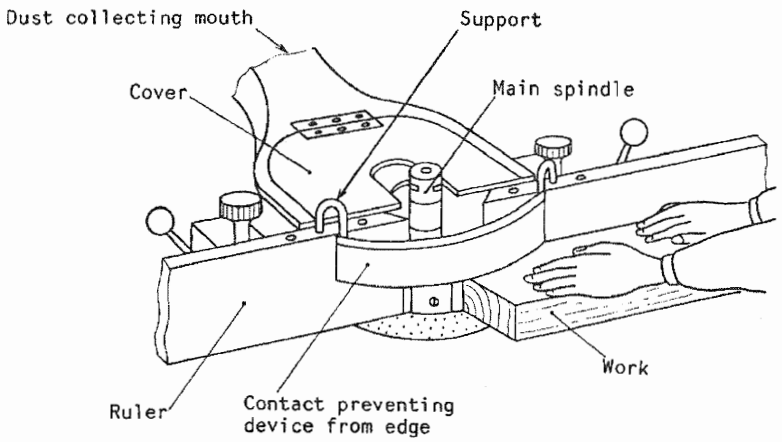
(1) Contact Preventing Device from Linear Processing Edge (see Fig. 4)

(a) It shall be so constructed that it is capable of covering other part of the edge than the part cutting the work.

(b) It shall be so constructed that it is capable of adjusting easily according to the cutting tools and works.

(c) It shall be that having strength of not causing deformations such as camber, twist, etc.

Fig. 4. Contact Preventing Device from Linear Processing Edge



Remark: The figure gives an example, but it does not specify the construction.

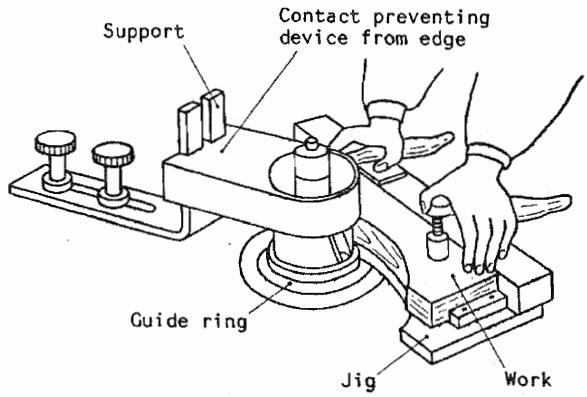
(2) Contact Preventing Device from Curve Processing Edge (see Fig. 5)

(a) It shall be so constructed that it is capable of covering the peripheral surface of the edge, excluding the upper part of the cutting tool (except the part of the shaft) and necessary part for cutting of the work.

(b) It shall be so constructed as to be capable of adjusting easily according to thickness of the work.

(c) It shall be that having strength of not causing deformations such as camber, twist, etc.

Fig. 5. Contact Preventing Device from Curve Processing Edge



Remark: The figure gives an example, but it does not specify the construction.

(3) Support of Contact Preventing Device from Edge

(a) It shall be that having sufficient strength for support.

(b) It shall be so constructed that the attaching and detaching, and adjustment of position of the contact preventing device from edge are performed with ease, as well as fixed securely.

(c) Bolts, nuts, etc. to be used for mounting shall be processed with locking or arresting measures.

4. Handling Instructions

The spindle shaper shall be annexed with the handling instruction in which the type, specifications, construction, tools, operation, maintenance, checking, preparation, installation and other matters to be attended on safety which are essential for securing safety shall be stated.

5. Inspection Sheets

The spindle shaper shall be annexed with the inspection sheets (inspection items and results thereof) concerning safety.

6. Marking

The spindle shaper shall be marked with the following information, on a conspicuous place by an indelible method:

(1) Manufacturer's name

(2) Year and month of manufacture and manufacturing number

(3) Type

(4) Rated output or rated current

(5) Rated voltage

(6) No load rotational speed (for a spindle shaper having a speed change mechanism, the no load rotational speed according to steps of speed change)

(7) Permissible height at an available maximum diameter and permissible diameter of cutting tool at the maximum height (for a spindle shaper having a speed change mechanism, these shall be indicated on respective steps of speed change)

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Japanese Text

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